

**GENERAL DESIGN CRITERIA**  
**SECTION 3-400**  
**STREET AND ROAD DESIGN**

### **3-400 STREET AND ROAD DESIGN - GENERAL**

The standards in the following sections are minimum standards prepared by the Engineering Division, Public Works Department, for the information and guidance of both City Staff and those professionals in the private design sector responsible for the design of the City's streets. The street design standards establish uniform policies and procedures to carry out the City's General Plan, and Circulation Element goals. It is neither intended as, nor does it establish, a legal safety standard. For more detailed information refer to the City of Chula Vista Street Design Standard Policy as adopted by City Council per Resolution 15349 on October 17, 1989.

The following standards are applicable primarily to areas without unusual terrain problems and in developed areas of the City where existing buildings do not create obstacles in obtaining needed right-of-way. In difficult terrain and in older developed areas where flexibility is required, deviations from these standards may be approved by the City Engineer, only after demonstration to the City that these standards are not reasonably achievable. The request for deviation must be prepared by a registered civil engineer and show that the safety of the public will not be reduced and that the deviation conforms with common engineering practice and standards.

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### **3-401 General Design Criteria**

Streets must be designed as required for the various functional classifications. Whenever expected ADT is greater than the approximate maximum ADT stated, the street shall be designed to a higher satisfactory functional classification. The widths and configurations of streets shown in this manual are related to the estimated future average daily traffic (ADT) for level of service (LOS) "C".

#### **3-401.1 Expressway**

Expressways are designed to move high volumes of traffic between major generators and to distribute traffic to and from the freeway system and provide intercommunity access. See Chula Vista Design Standard CVD-ST01 for typical cross section.

(1)       **Design Features**

There are three primary design features which contribute to higher roadway capacity on the expressway facility. These capacity increasing features include one mile (2km) spacing of major crossing intersections, grade separated urban interchanges and restricted access.

(2)       **Intersections/Crossings**

- a) Major crossings shall be spaced no less than one mile (2km) intervals except upon approval of the City Engineer. These major crossings shall be controlled by grade separated urban interchanges. Also, at locations where the expressway facility crosses regional freeways, special interchange geometric configurations may be required to carry the high volumes anticipated on the expressway facility.
- b) A raised median is required to separate the two directions of travel and to improve the visual appearance of the expressway corridor. No median openings shall be permitted.
- c) Pedestrian crossing demand should be well planned, focused and controlled to allow the periodic placement of mid-block overpasses to link major generators and attractors where appropriate.

(3)       **Access**

Vehicular access to and from the expressway from minor streets or abutting properties shall typically be restricted. Limited street or driveway access will only be considered by the City Engineer if all other feasible means of obtaining alternate access have been exhausted.

(4)       **Landscaping - Expressways shall provide landscaped buffer areas.**

(5)       **Parking/Bicycles - All non-motorized travel and parking on these facility shall be prohibited with the exception of emergency parking.**

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(6)	Design ADT	-	70,000
(7)	Minimum design speed	-	60 mph (96kph)
(8)	Curb-to-curb	-	104' (32m) (includes a 16'(5m) raised median)
(9)	Right-of-way	-	128' (39m)
(10)	Maximum grade	-	6%
(11)	Minimum curve radius	-	1,500' (457m) with 5% super-elevation; 2,500' (762m) with no superelevation

#### **3-401.2 Six-lane Prime Arterial**

The prime arterials are designed to move traffic between major generators. See CVD-ST01 for typical cross section.

- (1) Intersections/Crossings
  - a) Typically, intersections shall be spaced no closer than 660 feet (200m) and signalized intersections shall be spaced no closer than one-half mile (804m) intervals.
  - b) A raised median is required to separate the two directions of travel and to improve the visual appearance of the arterial corridor. No median openings shall be permitted except at major intersections.
  - c) Widen all approaches to intersections as per CVD-ST12 in order to provide for additional lanes as per CVD-ST11.
  - d) Pedestrian crossing demand should be well planned, focused and controlled to allow for crossings at major signalized intersections as well as the periodic placement of mid-block overpasses to link major generators and attractors where appropriate.
- (2) Access

Vehicular access to and from prime arterials from minor streets or abutting properties shall typically be restricted. No direct access from single-family residential homes is allowed. Should a property have frontage only on the prime arterial facility, driveway or minor street access shall be permitted at locations deemed appropriate by the City Engineer. These access points shall be limited to right turns in and right turns out only. Also, these access points shall require additional roadway width to provide for acceleration and deceleration lanes.
- (3) Landscaping - Landscaped buffer areas shall be provided on prime arterial facilities.
- (4) Parking - Parking on this facility shall be prohibited with the exception of emergency parking.

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| (5)  | Bicycles - Bike lanes shall be provided on prime arterial facilities in conformance with routes identified in the Bicycle Element of the Chula Vista General Plan. |   |
| (6)  | Design ADT   | - 50,000  |
| (7)  | Minimum design speed   | - 55 mph (88kph)  |
| (8)  | Curb-to-curb   | - 104' (32m)(includes a 16' (5m) median)                                      |
| (9)  | Right-of-way   | - 128' (39m)  |
| (10) | Maximum grade  | - 6%  |
| (11) | Minimum curve radius   | - 1,150' (350m) with 5% super-elevation; 2,000' (610m) without superelevation |

### 3-401.3 Six-lane Major

Major streets are primarily designed to distribute localized trips. See CVD-ST01 and CVD-ST02 for typical cross sections.

- (1) Intersections/Crossings
  - a) Typically, intersections shall be spaced no closer than 660 feet (200m) and signalized intersections shall be spaced no closer than one-quarter mile (402m) intervals.
  - b) A raised median is required to separate the two directions of travel and to improve the visual appearance of the major corridor. One mid-block median opening may be permitted with approval of the City Engineer. Such intersections and any resulting signals shall not negatively impact signal progression and traffic flow on major streets. This opening shall typically be spaced at the mid-point between the major intersections (approx. 660' (200m)). The specific location of these median openings shall be determined by the City Engineer.
  - c) Widen all approaches to intersections as per CVD-ST13 and CVD-ST14 in order to provide for additional lanes, as per CVD-ST11.
  - d) Pedestrian crossing demand should be well planned, focused and controlled to direct pedestrians to designated crossing points at signalized intersections.
- (2) Access

Vehicular access to and from six-lane major streets from abutting properties (commercial) shall typically be controlled but not restricted. No direct access from single-family residential homes is allowed. Full access median openings will be permitted on these facilities only at locations specified by the City Engineer and under conditions established by the City.

- (3) Landscaping - Six-lane major arterials shall provide landscaped buffer areas.
- (4) Parking - Parking on these facilities shall typically be allowed. However, parking at critical locations may be denied as deemed appropriate by the City Engineer.
- (5) Bicycles - If a bike lane is to be provided on this six-lane major facility and parking is to be retained, an additional 10 feet (3m) of right-of-way will be required to allow for a 10-foot (3m) widening of the roadway cross section.
- (6) Design ADT - 40,000
- (7) Minimum design speed - 45 mph (72kph)
- (8) Curb-to-curb - 104'(32m) (includes a 16' (5m) raised median)
- (9) Right-of-way - 128' (39m)
- (10) Maximum grade - 7%
- (11) Minimum curve radius - 1,100'(335m) with no superelevation

#### **3-401.4 FOUR-LANE MAJOR**

Major streets are primarily designed to distribute localized trips. See CVD-ST02 and CVD-ST21 for typical cross section.

- (1) Intersections/Crossings
  - a) Typically, intersections shall be spaced no closer than 660 feet (200m) and signalized intersections shall be spaced no closer than one-quarter mile (402m) intervals.
  - b) A raised median is required to separate the two directions of travel and to improve the visual appearance of the arterial corridor. One mid-bloc median opening may be permitted only with approval of the City Engineer. Such intersection and any resulting signals shall not negatively impact signal progression and traffic flow on major streets. This opening shall typically be spaced at the mid-point between the major intersections (approx. 660' (200m)). The specific location of these median openings shall be determined by the City Engineer.
  - c) Widen all approaches to intersections as per CVD-ST15 & 16 in order to provide for additional lanes, as per CVD-ST11.
  - d) Pedestrian crossing demand should be well planned, focused and controlled to direct pedestrians to designated crossing points at signalized intersections.

- (2) Access
- Vehicular access to and from four-lane major streets from abutting properties shall typically be controlled but not restricted. No direct access from single-family residential homes is allowed. In developed areas direct access from single-family homes may be allowed as determined by City Engineer. Full access median openings may be permitted at locations as determined by the City Engineer and under conditions established by the City.
- (3) Landscaping - Four-lane majors shall provide landscaped buffer areas.
- (4) Parking - Parking on these facilities shall typically be allowed. However, parking at critical locations may be denied as deemed appropriate by the City Engineer.
- (5) Bicycles - If a bike lane is to be provided on this four-lane major facility and parking is to be retained, an additional 10 feet (3m) of right-of-way will be required to allow for a 10-foot (3m) widening of the roadway cross section.

			Commercial Areas (frequent driveways)	Low Density Areas
(6)	Design ADT	-	28,000	30,000
(7)	Minimum design speed	-	45 mph (72kph)	55mph (88kph)
(8)	Curb-to-curb	-	80'(24m) (includes 16' (5m) median)	80'(24m) (includes a 16' (5m) median)
(9)	Right-of-way	-	104' *(32m)	104' (32m)
(10)	Maximum grade	-	7%	7%
(11)	Minimum curve -	-	1,100' (335m) with no super- elevation	1,150' (350m) with 5% super elevation; 2,000' (610m) with no super- elevation

### 3-401.5 Class I Collector Streets

Class I collector streets serve primarily to circulate localized traffic and to distribute traffic to and from arterials and major streets. Class I collectors are designed to accommodate four lanes of traffic, however, they carry lower traffic volumes at slower speeds than major arterials, and they have a continuous left turn lane separating the two directions of traffic flow. See CVD-ST02 and CVD-ST21 for typical cross section.

- (1) Intersections/Crossings
  - a) Typically, intersections shall be spaced no closer than 660 feet (200m) and signalized intersections shall be spaced no closer than one-quarter mile (402m) intervals.
  - b) Widen all approaches to intersections in developed areas west of I-805 as per CVD-ST016 in order to provide for additional lanes, as per CVD-ST11.
  - c) In special cases if no abutting property access is allowed, the strip's median, with approval of the City Engineer, can be reduced to 4 feet (1.5m).
- (2) Access

Access to and from Class I collector streets from abutting properties shall typically be controlled but not restricted. No direct access from single-family residential homes is allowed. In developed areas, direct access from single-family homes may be approved by the City Engineer.
- (3) Parking - Parking on this facility shall typically be allowed. However, parking at critical locations may be denied as deemed appropriate by the City Engineer.
- (4) Bicycles - If a bike lane is to be provided in conformance with the Bicycle Element on this Class I facility and parking is to be retained, an additional 10 feet (3m) of right-of-way will be required to allow for a 10-foot (3m) widening of the roadway cross section.
- (5) Design ADT - 22,000
- (6) Minimum design speed - 45 mph (72kph)
- (7) Curb-to-curb - 74' (23m)
- (8) Right-of-way - 94' (29m)
- (9) Maximum grade - 8%
- (10) Minimum curve radius - 700' (214m) with 5%  
superelevation; 1,100' (335m)  
with no superelevation

#### **3-401.6 Class II Collector Streets**

Class II collector streets with two-way center turn lanes serve primarily to circulate localized traffic and to distribute traffic to and from arterials, major streets and Class I collectors. Class II collectors are designed to accommodate two lanes of traffic, however, they carry lower traffic volumes at slower speeds than Class I collector streets.

This type of facility provides access to properties and circulation to residential neighborhoods. See CVD-ST03 and CVD-ST22 for typical cross section.

- (1) Intersections
  - a) Minimum distance between centerline of intersections shall be 250 feet (76m)
  - b) Widen all approaches to intersections in developed areas west of I-805 in conformance with CVD-ST16 to provide additional lanes as shown in CVDS-ST11.
- (2) Access - Access to and from Class II collector streets from abutting properties shall be permitted at locations approved by the City Engineer.
- (3) Parking - Parking on this facility shall typically be allowed. However, parking at critical locations may be denied as deemed appropriate by the City Engineer.
- (4) Bicycles - If a bike lane is to be provided on this Class II facility and parking is to be retained, an additional 10 feet (3m) of right-of-way will be required to allow for a 10-foot (3m) widening of the roadway cross section.
- (5) Design ADT - 12,000
- (6) Minimum design speed - 30 mph (48kph)
- (7) Curb-to-curb - 52' (16m)
- (8) Right-of-way - 72' (22m)
- (9) Maximum grade - 10% residential zone
- (10) Minimum curve radius - 300' (91m) with 4% superelevation; 450' (138m) with no superelevation

#### **3-401.7 Class III Collector Streets**

Class III collector streets circulate localized traffic as well as distribute traffic to and from arterials and other collectors to access residential areas. Class III collector streets accommodate low volume levels and the use of this facility as a carrier of through traffic should be discouraged by its design. See CVD-ST03 and CVD-ST22 for typical cross section.

- (1) Intersections - Minimum distance between centerline of intersections shall be 250 feet (76m).
- (2) Parking - Parking on this facility shall typically be allowed. However, parking at critical locations may be denied as deemed appropriate by the City Engineer.

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| (3) | Bicycles - If a bike lane is to be provided on this Class III facility and parking is to be retained, an additional 10 feet (3m) of right-of-way will be required to allow for a 10-foot (3m) widening of the roadway cross section. |   |
| (4) | Design ADT   | - 7,500 with no driveway access from abutting property. 5,000 with driveway access from abutting property                                 |
| (5) | Minimum design speed   | - 30 mph (48kph)  |
| (6) | Curb-to-curb   | - 40' (12m)   |
| (7) | Right-of-way   | - 60' (18m)   |
| (8) | Maximum grade  | - 12%   |
| (9) | Minimum curve radius   | - 450' (138m) with no superelevation; super-elevation may be approved by the City Engineer where there is no residential driveway access. |

**3-401.8 Residential Streets**

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| (1)  | See CVD-ST03, CVD-ST04, CVD-ST22, and CVD-ST23 for typical cross section.  |                                       |
| (2)  | Minimum distance between centerline intersections shall be 150 feet (46m).   |                                       |
| (3)  | Grade segments in excess of 12% shall not exceed 300 feet (91m) in length.   |                                       |
| (4)  | Minimum radius for cul-de-sacs with a maximum length of 500 feet (152m) may be 100 feet (30m) and a maximum central angle of 45° subject to the approval of the City Engineer. The minimum tangent length between horizontal curves of radius 100 feet (30m) shall be 150 feet (152m). |                                       |
| (5)  | Average grade over any 1,000-foot (305m) segment shall not exceed 10%.   |                                       |
| (6)  | Portland cement concrete pavement shall be required for grades in excess of 12%.   |                                       |
| (7)  | Design ADT   | - 1,200                               |
| (8)  | Minimum design speed   | - 25 mph (40kph)                      |
| (9)  | Curb-to-curb   | - 36' (11m) (34' (10m) single loaded) |
| (10) | Right-of-way   | - 56' (17m) (50' (15m) single loaded) |
| (11) | Maximum grade  | - 15%                                 |

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(12)	Minimum curve radius	-	200' (61m) with no super-elevation
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**3-401.9 Industrial Roads**

(1)	See CVD-ST04 and CVD-ST23 for typical cross section.		
(2)	Minimum distance between centerline intersections is 300 feet (91m).		
(3)	Design ADT	-	2,000
(4)	Minimum design speed	-	30 mph (48kph)
(5)	Curb-to-curb	-	52' (16m)
(6)	Right-of-way	-	72' (22m)
(7)	Maximum grade	-	7%
(8)	Minimum curve radius	-	450' (138m) with no super-elevation

**3-401.10 ADDITIONAL DESIGN CRITERIA**

- (1) No transition shall be allowed on horizontal curves except upon approval of the City Engineer.
- (2) Circular curves shall be used for all horizontal changes of centerline direction.
- (3) Horizontal curves for median curbs shall not be less than the center line radius less the offset.
- (5) Vertical curves shall be used when change in grade exceeds 1% in sags and 0.5% on crests.
- (6) Angles between centerlines of intersecting streets shall be as close to right angles as possible, but in no case less than 70° or greater than 110°. Streets shall intersect only in tangent sections. Tangent lengths shall extend a minimum of 100'(30m) beyond the point of curb return on each leg of an intersection except as approved by the City Engineer.
- (5) Intersection sight distance shall comply with the current CALTRANS Highway Design Manual and Chula Vista Design Standards.
- (7) A minimum of one on-street parking space (20 feet(6m)) shall be provided along the frontage of each residential lot. Equivalent on-street parking space may be acceptable upon approval of the City Engineer.
- (8) All streets with controlled access devices, such as gates, shall contain the following features:

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- a) Gates shall be 150 feet (45m) away from the extension of the intersecting street curblines, except upon approval by the City Engineer.
  - b) All motorized gates shall include a Knox switch and Opticom device with manual override approved by the City Fire Marshal.
  - c) A turnaround shall be provided at the location of the gate. The size and location of said turn-around and gate, shall be approved by the City Engineer.
- (9) Compound curves shall not be allowed.
- (10) The maximum centerline grade for permanent cul-de-sac streets within the turnaround area shall be 5%, the maximum centerline grade for temporary cul-de-sacs shall be 8%.
- (11) The minimum gutter grade in the turn around segments of cul-de-sacs shall be 1%.
- (12) The maximum longitudinal street grade or cross slope at 90 degrees to a cross gutter shall be 3% for 25 feet (8m) from any edge of the cross gutter. This grade may be increased at residential intersections, subject to approval of the City Engineer, if the intersection is designed as a maximum comfortable acceleration sag vertical curve designed for a minimum speed of 25 mph (40kph) [i.e., Length of vertical curve = 3.125 feet x Difference in approach grades] and the maximum cross slope in any driving lane is 5%.
- (13) The maximum grade at any intersection of two streets shall be 6% within the intersection and for at least 50 feet (17m) past the nearest curb lines of the intersecting street as long as ADA requirements for sidewalks, etc. are met.
- (14) Pavement cross slopes shall be in accordance with CVD-ST01 through ST04 and CVD-ST31 through CVD-ST35. The minimum cross slope shall be 2% except at intersections where the cross slope may be reduced to 1%. The maximum cross slope shall be 5% on any street whose cross section varies from said construction standards.
- (15) At major street to major street intersections and above, the pavement cross slope shall be reduced to 1% through the intersection.
- (16) Portland Cement Concrete monolithic curbs, gutters, and sidewalks are required along all streets with the exception that the City Engineer may approve reduction of sidewalk requirements in those areas that are deemed unnecessary by the City Engineer.
- (17) Pedestrian ramps in accordance with the San Diego Regional Standard Drawings shall be constructed in the following locations on all streets unless otherwise approved by the City Engineer:
- a) All curb returns
  - b) At t-intersections opposite one curb return.

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- (18) Driveway approaches for all residential and commercial applications shall conform to CVCS1, unless otherwise approved by the City Engineer.
- (19) Cross gutters will not be allowed at signalized intersections unless otherwise approved by the City Engineer.
- (20) Curb returns shall be checked for constructability. When the forms are "warped" in the field, it will result in severe grade breaks, bad drainage and a poor driving lane. The calculated PI of the curb return shall be determined from the extended curb grade of the main street. The straight grade from the PCR to the calculated PI of the curb return shall be shown on the plan. The grade breaks from this grade and the grade of the tangent portion of the curb at the PCR shall not exceed 1%. The curb return shall be designed in a plane.
- (21) The maximum grade along the curb of a curb return shall not exceed 6% and the sidewalk in all places shall not exceed 8.33%.
- (22) Lighted sag vertical curves, when sight distance requirements do not govern, shall be of sufficient length to produce no perceptible acceleration. The minimum length of vertical curve shall be  $L=1.2 AV^2$ , where L is the length of the vertical curve in feet, A is the algebraic difference in grades in decimal and V is the design speed in miles per hour. This formula may be used at intersections for Residential and Class III Street classifications, or equivalent, only if other design options are not feasible.
- (23) The safe speed of vertical curves, as designed, shall be shown on the plans ( $V=X$  mph (or kph) and should equal or exceed the design speed for the classification of the road.
- (24) In new streets or existing streets with storm drain, median drainage shall be provided per CVD-ST11-Alternate A
- (25) Bus Turnout Criteria – Bus turnouts shall be considered if one or more of the following factors are present:
- a) Location convenient to park & ride facilities, intermodal transfer facilities, and/or transfer facilities between bus services.
  - b) Location serves major pedestrian traffic generators (i.e. village centers, shopping malls, schools, transit centers, hospitals, etc.)
  - c) Transit route dwell time exceeds 30 seconds.
  - d) Posted traffic speed limit is greater than 40 mph.
  - e) Bus volumes are 5 or more per peak hour.
  - f) Passenger volumes exceed 20 boardings per hour.

- g) Traffic in the curb lane exceeds 250 vehicles during peak hours.
- h) History of traffic and/or pedestrian accidents at the stop location.
- i) Sight distance prevents traffic from stopping safely behind a stopped bus.

Bus turnouts shall be designed to meet the regional standard described in the Metropolitan Transit Development Board's Designing for Transit Manual, and meet all applicable American with Disabilities Act (ADA) accessibility requirements.

The location of bus turnouts is subject to the approval of the City Engineer. Far side placement at intersections is preferred in most cases to avoid conflicts with right turn movements and obstruction of views of traffic for pedestrians and autos.

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**3-401.11 STREET STANDARD SUMMARY**

CLASS	CVDS DWG. NO.	DESIGN ADT	DESIGN SPEED MPH (KPH)	STREET WIDTHS <sup>8</sup>							MINIMUM CENTERLINE RADIUS <sup>1</sup>		MAX. GRADE %
				TRAVEL LANES (ft.(m))		PARKING LANES (ft.(m))		MEDIAN WIDTH (ft.(m))	CURB- CURB (ft.(m))	ROW (ft.(m))	SUPER- ELEV. (ft.(m))	NO SUPER- ELEV. (ft.(m))	
				NO. LANES	WIDTH/ LANE	NO. LANES	WIDTH/ LANE						
EXPRESSWAY	CVD-ST01	70,000	60 (96)	6	12 (3.6)	2	8 (2.4)	16 (4.9)	104 (32)	128 (39)	1,500 (457)	2,500 (762)	6
6-LANE PRIME ARTERIAL	CVD-ST01	50,000	55 (88)	6	12 (3.6)	2	8 (2.4)	16 (4.9)	104 (32)	128 (39)	1,150 (350)	2,000 (610)	6
6-LANE MAJOR <sup>2</sup>	CVD-ST01 ST02	40,000	45 (72)	6	12 (3.6)	2	8 (2.4)	16 (4.9)	104 (32)	128 (39)		2,000 (610)	7
4-LANE MAJOR	CVD-ST02, ST21	28,000 <sup>3</sup>	45 (72)	4	12 (3.6)	2	8 (2.4)	16 (4.9)	80 (24)	104 (32)		1,100 <sup>3</sup> (335)	7
CLASS I COLLECTOR	CVD-ST02, ST21	22,000	45 (72)	4	12 (3.6)	2	8 (2.4)	4/10 <sup>4</sup> (1.2/3)	74 (22.5)	94 <sup>4</sup> (29)	700 (213)	1,100 (335)	8
CLASS II COLLECTOR	CVD-ST03, ST22	12,000	30 (48)	2	13 (4)	2	8 (2.4)	10 (3m)	52 (16)	72 (22)	300 (91)	450 (137)	10
CLASS III COLLECTOR	CVD-ST03, ST22	7,500/ 5,000 <sup>5</sup>	30 (48)	2	20 (6)	-	-	-	40 (12)	60 (18)		450 (137)	12
RESIDENTIAL <sup>6</sup>	CVD-ST03 ST04, ST22, ST23	1,200	25 (40)	2	18 (5.5)	-	-	-	36	56 (17)		200 (61)	15 <sup>7</sup>
INDUSTRIAL	CVD-ST04, ST23	2,000	30 (48)	2	26 (8)	-	-	-	52	72 (22)		450 (137)	7

1 – SEE CURRENT STREET DESIGN STANDARDS POLICY FOR SUPERELEVATION CROSS SLOPES.

2 – THE CRITERIA FOR 6-LANE MAJORES IN DEVELOPED AREA WEST OF I-805 DIFFERS. SEE STREET DESIGN POLICY.

3 – THESE VALUES DIFFER FOR 4-LANE MAJORS IN A LOW DENSITY AREA. SEE STREET DESIGN POLICY.

4 – THESE VALUES MAY BE REDUCED WITH APPROVAL OF THE CITY ENGINEER. SEE STREET DESIGN POLICY.

5 – THIS VALUE IS FOR NO DRIVEWAY ACCESS FROM ABUTTING PROPERTIES. IF DRIVEWAY ACCESS IS APPROVED, USE 5,000 ADT

6 – THESE VALUES VARY FOR SINGLE LOADED RESIDENTIAL STREETS. SEE STREET DESIGN POLICY

7 – STREET SEGMENTS IN EXCESS OF 12% SHALL NOT EXCEED 300 FT. IN LENGTH. AVERAGE GRADE OVER ANY 1,000 FT. SEGMENT SHALL NOT EXCEED 10%.

8 – ADDITIONAL WIDTH SHALL BE PROVIDED FOR ROADWAYS WITH DESIGNATED BIKE LANES.

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### 3-402 General Design Criteria – *Otay Ranch Street Standards*

Streets must be designed as required for the various functional classifications. Whenever expected ADT is greater than the approximate maximum ADT stated, the street shall be designed to a higher satisfactory functional classification unless otherwise approved by the Director of Planning and Building and the City Engineer. These standards should be used within the **Otay Ranch GDP** area only.

#### 3-402.1 Otay Ranch Expressway

Expressways are designed to move high volumes of traffic between major generators and to distribute traffic to and from the freeway system and provide intercommunity access. See Chula Vista Design Standard CVD-ST31 for typical cross section.

(1) Design Features

There are three primary design features which contribute to higher roadway capacity on the expressway facility. These capacity increasing features include one mile (2km) spacing of major crossing intersections, grade separated urban interchanges and restricted access.

(2) Intersections/Crossings

- a) Major crossings shall be spaced no less than one mile (2km) intervals except upon approval of the City Engineer. These major crossings shall be controlled by grade separated urban interchanges. Also, at locations where the expressway facility crosses regional freeways, special interchange geometric configurations may be required to carry the high volumes anticipated on the expressway facility.
- b) A raised median is required to separate the two directions of travel and to improve the visual appearance of the expressway corridor. No median openings shall be permitted.
- c) Pedestrian crossing demand should be well planned, focused and controlled to allow the periodic placement of mid-block overpasses to link major generators and attractors where appropriate.

(3) Access

Vehicular access to and from the expressway from minor streets or abutting properties shall typically be restricted. Limited street or driveway access will only be considered by the City Engineer if all other feasible means of obtaining alternate access have been exhausted.

(4) Landscaping - Expressways shall provide landscaped buffer areas.

(5) Parking/Bicycles - All non-motorized travel and parking on these facilities shall be prohibited with the exception of emergency parking.

(6)	Design ADT	-	70,000 Level of Service C
(7)	Minimum design speed	-	60 mph (96kph)
(8)	Curb-to-curb	-	104' (32m) (includes a 16'(5m) raised median)
(9)	Right-of-way	-	128' (39m)
(10)	Maximum grade	-	6%
(11)	Minimum curve radius	-	1,500' (457m) with 5% super-elevation; 2,500' (762m) with no superelevation

#### **3-402.2 Otay Ranch-Six-lane Prime Arterial**

The prime arterials are designed to move traffic between major generators. See CVD-ST31 for typical cross section.

- (1) Intersections/Crossings
  - a) Typically, intersections shall be spaced no closer than 660 feet (200m) and signalized intersections shall be spaced no closer than one-half mile (804m) intervals.
  - b) A raised median is required to separate the two directions of travel and to improve the visual appearance of the arterial corridor. No median openings shall be permitted except at major intersections.
  - c) Widen all approaches to intersections as per CVD-ST12 in order to provide for additional lanes as per CVD-ST37.
  - d) Pedestrian crossing demand should be well planned, focused and controlled to allow for crossings at major signalized intersections as well as the periodic placement of mid-block overpasses to link major generators and attractors where appropriate.
- (2) Access

Vehicular access to and from prime arterials from minor streets or abutting properties shall typically be restricted. No direct access from single-family residential homes is allowed. Should a property have frontage only on the prime arterial facility, driveway or minor street access shall be permitted at locations deemed appropriate by the City Engineer. These access points shall be limited to right turns in and right turns out only. Also, these access points shall require additional roadway width to provide for acceleration and deceleration lanes.
- (3) Landscaping - Landscaped buffer areas shall be provided on prime arterial facilities.

- (4) Parking - Parking on this facility shall be prohibited with the exception of emergency parking.
- (5) Bicycles - Bike lanes shall be provided on prime arterial facilities in conformance with routes identified in the Bicycle Element of the Chula Vista General Plan.
- (6) Design ADT - 50,000 Level of Service C
- (7) Minimum design speed - 55 mph (88kph)
- (8) Curb-to-curb - 104' (32m)(includes a 16' (5m) median)
- (9) Right-of-way - 128' (39m)
- (10) Maximum grade - 6%
- (11) Minimum curve radius - 1,150' (350m) with 5% super-elevation; 2,000' (610m) without superelevation

#### **3-402.3 OTAY RANCH - SIX-LANE MAJOR**

Major streets are primarily designed to distribute localized trips. See CVD-ST31 for typical cross-sections.

- (1) Intersections/Crossings
  - a) Typically, intersections shall be spaced no closer than 660 feet (200m) and signalized intersections shall be spaced no closer than one-quarter mile (402m) intervals.
  - b) A raised median is required to separate the two directions of travel and to improve the visual appearance of the major corridor. One mid-block median opening may be permitted with approval of the City Engineer. Such intersections and any resulting signals shall not negatively impact signal progression and traffic flow on major streets. This opening shall typically be spaced at the mid-point between the major intersections (approx. 660' (200m)). The specific location of these median openings shall be determined by the City Engineer.
  - c) Widen all approaches to intersections as per CVD-ST13 and CVD-ST14 in order to provide for additional lanes, as per CVD-ST37.
  - d) Pedestrian crossing demand should be well planned, focused and controlled to direct pedestrians to designated crossing points at signalized intersections.
- (2) Access

Vehicular access to and from six-lane major streets from abutting properties (commercial) shall typically be controlled but not restricted. No direct access

from single-family residential homes is allowed. Full access median openings will be permitted on these facilities only at locations specified by the City Engineer and under conditions established by the City.

- |      |  |   |                                       |
|------|--|---|---------------------------------------|
| (3)  | Landscaping – Six-lane major arterials shall provide landscaped buffer areas.                      |   |                                       |
| (4)  | Parking – Parking on these facilities shall be prohibited with the exception of Emergency Parking. |   |                                       |
| (5)  | Design ADT   | - | 40,000                                |
| (6)  | Minimum design speed   | - | 45 mph (72kph)                        |
| (7)  | Curb-to-Curb<br>(5m) raised median)  | - | 104' (32m) (includes a 16'            |
| (8)  | Right-of-Way   | - | 128' (39m)                            |
| (9)  | Maximum Grade  | - | 7%                                    |
| (10) | Minimum curve radius   | - | 1,100' (335m) with no super-elevation |

#### **3-402.4 OTAY RANCH - FOUR-LANE MAJOR**

Major streets are primarily designed to distribute localized trips. See CVD-ST31 for typical cross section.

- (1) Intersections/Crossings
  - a) Typically, intersections shall be spaced no closer than 660 feet (200m) and signalized intersections shall be spaced no closer than one-quarter mile (402m) intervals.
  - b) A raised median is required to separate the two directions of travel and to improve the visual appearance of the arterial corridor. One mid-block median opening may be permitted only with approval of the City Engineer. Such intersection and any resulting signals shall not negatively impact signal progression and traffic flow on major streets. This opening shall typically be spaced at the mid-point between the major intersections (approx. 660' (200m)). The specific location of these median openings shall be determined by the City Engineer.
  - c) Widen all approaches to intersections as per CVD-ST31 in order to provide for additional lanes, as per CVD-ST37.
  - d) Pedestrian crossing demand should be well planned, focused and controlled to direct pedestrians to designated crossing points at signalized intersections.

- (2) Access
- Vehicular access to and from four-lane major streets from abutting properties shall typically be controlled but not restricted. No direct access from single-family residential homes is allowed. In developed areas direct access from single-family homes may be allowed as determined by City Engineer. Full access median openings may be permitted at locations as determined by the City Engineer and under conditions established by the City.
- (3) Landscaping - Four-lane majors shall provide landscaped buffer areas.
- (4) Parking - Parking on these facilities shall be prohibited with the exception of emergency parking.

		Commercial Areas (frequent driveways)	Low Density Areas
(5)	Design ADT	28,000	30,000
(6)	Minimum design speed	45 mph (72kph)	55 mph (88kph)
(7)	Curb-to-curb	80' (24m) [includes 16' (5m) median]	80' (24m) [includes 16' (5m) median]
(8)	Right-of-Way	104' (32m)	104' (32m)
(9)	Maximum Grade	7%	7%
(10)	Minimum curve radius	1,100' (335m) with no super-elevation	1,150' (350m) with 5% superelevation; 2,000' (610m) with no superelevation

#### 3-402.5 Otay Ranch-Transit Village Entry/Village Entry

Village entry streets serve primarily to circulate localized traffic and to distribute traffic to and from arterials and major streets. These streets are designed to accommodate four lanes of traffic, however, they carry lower traffic volumes at slower speeds than major arterials. See CVD-ST32 for typical cross section.

- (1) Intersections/Crossings
- a) Typically, signalized and unsignalized intersections shall be spaced no closer than 400 feet (120m).
  - b) Widen all approaches to intersections as per CVD-ST36 in order to provide for additional lanes, as per CVD-ST37.

(2) Access

Access to and from these facilities from abutting properties shall typically be controlled but not restricted. No direct access from single-family residential homes is allowed. Only limited access from commercial or multi-family properties served by a single driveway may be allowed with the approval of the City Engineer.

(3) Parking - Parking on this facility shall be prohibited with the exception of emergency parking. However, parking at Village core areas may be approved as determined by the City Engineer.

		<u>Transit Village Entry</u>	<u>Village Entry</u>
(4)	Design ADT	22,000	22,000
(5)	Minimum design speed	35 mph (56kph)	35 mph (56kph)
(6)	Curb-to-curb	97'-111' (29.6-33.8m) 133'-137' (40.5-41.8m)	76' (23.2m) 112' (34m)
(7)	Right-of-Way	104' (32m)	104' (32m)
(8)	Maximum Grade	8%	8%
(9)	Minimum curve radius	450' (137m) with no super-elevation	450' (137m) with no superelevation

**3-402.6 Otay Ranch-Secondary Village Entry w/Median/Secondary Village Entry**

Secondary Village Entry streets serve primarily to circulate localized traffic and to distribute traffic to and from arterials, major streets and Village entry streets. These facilities are designed to carry lower traffic volumes at slower speeds than Village entry streets. This type of facility provides access to properties and circulation to residential neighborhoods. See CVD-ST33 for typical cross section.

(1) Intersections

- a) Minimum distance between centerline of intersections shall be 250 feet (76m).
- b) Widen all approaches to intersections as per CVD-ST36 in order to provide for additional lanes, as per CVD-ST37.

(2) Access - Access to and from this facility from abutting properties shall be permitted at locations approved by the City Engineer.

- (3) Parking – Parking on this facility shall be prohibited with the exception of Emergency Parking.

		<u>Secondary Village Entry w/Median</u>	<u>Secondary Village Entry</u>
(4)	Design ADT	7,500	7,500
(5)	Minimum design speed	25 mph (40kph)	25 mph (40kph)
(6)	Curb-to-curb	68' (207m)	34' (104m)
(7)	Right-of-Way	95' (29m)	61' (22.9m)
(8)	Maximum Grade	10% (residential)	10% (residential zone)
(9)	Minimum curve radius	200' (61m) with no super-elevation	200' (61m) with no superelevation

#### 3-402.7 **Otay Ranch-Residential Promenade/Core Promenade**

Promenade streets circulate localized traffic as well as distribute traffic to and from arterials and other collectors to access residential areas. These streets accommodate low volume levels and the use of this facility as a carrier of through traffic should be discouraged by its design. See CVD-ST34 for typical cross section.

- (1) Intersections – Minimum distance between centerline of intersections shall be 250 feet (76m)
- (2) Parking – Parking on this facility shall typically be allowed. However, parking at critical locations may be denied as deemed appropriate by the City Engineer.

		<u>Core Promenade</u>	<u>Residential Promenade</u>
(3)	Design ADT	7,500 with no driveway access from abutting property. 5,000 with driveway access from abutting property.	7,500 with no driveway access from abutting property. 5,000 with driveway access from abutting property.
(4)	Minimum design speed	25 mph (40kph)	25 mph (40kph)
(5)	Curb-to-curb	40' (12m)	32' (9.8m)

(6)	Right-of-Way	69' (20.4m)	59' (18.0m)
(7)	Maximum Grade	12%	12%
(8)	Minimum curve radius	200' (61m) with no super-elevation.	200' (61m) with no superelevation

**3-402.8 Otay Ranch-Parkway Residential/Single Loaded Residential**

- (1) See CVD-ST35 for typical cross section.
- (2) Minimum distance between centerline intersections shall be 150 feet (46m).
- (3) Grade segments in excess of 12% shall not exceed 300 feet (91m) in length.
- (4) Minimum radius for cul-de-sacs with a maximum length of 500 feet (152m) may be 100 feet (30m) and a maximum central angle of 45° subject to the approval of the City Engineer. The minimum tangent length between horizontal curves of radius 100 feet (30m) shall be 150 feet (152m).
- (5) Average grade over any 1,000-foot (305m) segment shall not exceed 10%.
- (6) Portland cement concrete pavement shall be required for grades in excess of 12%.
- (7) Design ADT - 1,200
- (8) Minimum design speed - 25 mph (40kph)
- (9) Curb-to-curb - 32' (9.8m) (28' (8.5m) single loaded)
- (10) Right-of-way - 58' (17.7m) (54' (16.5m) single loaded)
- (11) Maximum grade - 15%
- (12) Minimum curve radius - 200' (61m) with no superelevation

**3-402.9 Otay Ranch-Industrial Roads**

- (1) See CVD-ST35 for typical cross section.
- (2) Minimum distance between centerline intersections is 300 feet (91m).
- (3) Design ADT - 2,000
- (4) Minimum design speed - 30 mph (48kph)
- (5) Curb-to-curb - 52' (16m)

- |     |                      |   |                                    |
|-----|----------------------|---|------------------------------------|
| (6) | Right-of-way         | - | 72' (22m)                          |
| (7) | Maximum grade        | - | 7%                                 |
| (8) | Minimum curve radius | - | 450' (138m) with no superelevation |

**3-402.10 Otay Ranch-Additional Design Criteria**

- (1) Refer to Section 3-401.10 for additional design criteria.

**3-403 Public Streets/Otay Ranch Streets**

3-403.1 The Chula Vista Street Design Standards Policy contains standards for typical street sections and specific design criteria. Generally, street systems shall provide:

- (1) Streets compatible with the pattern and type of streets in the General Plan;
- (2) Adequate capacity for the development of adjacent lands and projected traffic volumes;
- (3) Adequate access for the area being developed;
- (4) Type G monolithic curb, gutter and sidewalk per adopted San Diego Regional Standard Drawings unless otherwise approved by the City Engineer or shown on the approved Tentative Map.

**3-403.2 Subdivision Design Criteria for Streets**

- (1) Generally street systems within subdivisions shall be designed as Class III collectors or residential streets and shall satisfy the City Standards for those classifications and the following general criteria:
  - a) Class III collector streets:
    - 1) Collect and carry principally vehicular traffic generated by 120 to 500 tributary dwelling units through a subdivision.
    - 2) Constitute the principal entrance to a residential subdivision of more than 120 lots.
  - b) Residential streets:
    - 1) Provide access to not more than 120 tributary dwelling units
    - 2) Are not to be used as a principal entrance to a subdivision and shall be designed in such manner as to discourage their use by through traffic.
    - 3) Four-way intersections involving residential streets shall be avoided.
- (2) Otay Ranch Streets: See Otay Ranch Street Standards Summary in Section 3-403.3 for the Otay Ranch Street Sections.
- (3) Frontage roads are discouraged by the City but may be used upon approval of the City Engineer and City Council.
- (4) Main access to any school shall meet or exceed requirements for a Class III Collector street.

- 
- (5) Half-width streets may be permitted by the City Council along the boundary of a subdivision or the developer's property. Only the portion of right of way required for the half-width street need be dedicated on the subdivision map. Minimum paved width from face of curb to edge of pavement shall be twenty-eight feet (8.5m).
- (6) Streets proposed to provide future connections to adjoining property shall be extended to the subdivision boundary. Subdivider shall submit an alignment and profile demonstrating the feasibility of such a future extension. The profile shall extend a minimum of 300 feet (90m) beyond the subdivision boundary or as deemed necessary by the City Engineer.
- (7) a) Cul-de-sac streets shall conform to CVD-ST06. A street ending in a cul-de-sac shall provide access to no more than 30 single-family residential lots.
- b) Single family residential development shall not exceed 120 residential lots unless two points of access are provided.
- c) Single family residential development shall not exceed 200 residential lots unless three points of access are provided.
- d) Points of access mean streets with no driveway access consisting of two or more lanes. "Emergency access only" type connections shall not be considered as a point of access.
- e) These requirements do not apply to condominium or multi-family residential land uses.
- (8) All streets not intended for through traffic shall end in a cul-de-sac.
- (9) Streets to be subsequently extended beyond the development boundaries shall terminate in one of the following:
- a) A temporary turnaround with a minimum radius of 24 feet (7m) shall be constructed upon the adjoining property (If the adjoining property owner(s) grants permission to construct such temporary turnaround on their property; or
- b) A temporary street shall be constructed across the adjoining property; or
- c) A permanent type cul-de-sac will be constructed within the development boundaries as a temporary measure until the street is extended.
- (10) Continuous Left-Turn Lanes. Ten-foot minimum, continuous, two-way left-turn lanes, may be authorized by the City Engineer subject to the following conditions:
- a) Distance between curbs must exceed 36 feet; and
- b) Posted speed limit does not exceed 40 miles per hour; and

- c) Where development is primarily commercial, and where heavy demand exists for left-turns in and out of driveways.
- (11) Minimum centerline grade for public streets shall be 0.5%.
- (12) Portland Cement Concrete (PCC) pavement with cutoff walls shall be required for all public streets with centerline grades in excess of 12%.
- (13) All horizontal curves shall have a minimum intervening tangent distance measured along the centerline in feet equal to four times the design speed (designated in miles per hour) of the street.
- (14) Superelevation shall be provided on all streets where required by the City Engineer.
- (15) Minimum curb return radii at face of curb shall be:
- a) Residential street to residential street: 20 feet (6m)
- b) All other intersections: 30 feet (10m)
- (16) Sight Distance - Intersection sight distance shall comply with the current CALTRANS Highway Design Manual. Refer also to Chula Vista Design Standards.

If headlight sight distance is not available in grade sags, lighting may be considered and the following formula may be used:

$$L = \frac{AV^2}{46.5}$$

Where:      L = Length of vertical curve  
                  A = Algebraic difference of grades in percent  
                  V = Design speed

This formula may be used only with written approval by the City Engineer.

- (17) Placement of guardrail shall conform to the California Department of Transportation's Traffic Manual and AASHTO's Roadside Design Guide.

### SECTION 3-403.3

OTAY RANCH STREET STANDARDS SUMMARY													
CLASS	CVDS DWG. NO. <sup>1</sup>	DESIGN ADT	DESIGN SPEED MPH (KPH)	STREET WIDTHS <sup>8</sup>							MINIMUM CENTERLINE RADIUS <sup>2</sup>		MAX. GRADE %
				TRAVEL LANES (ft.(m))		PARKING LANES (ft.(m)) OR BIKE LANE		MEDIAN WIDTH (ft.(m))	CURB- CURB (ft.(m))	ROW (ft.(m))	SUPER ELEVATION (ft.(m))	NO SUPER ELEVATION (ft.(m))	
				No. Lanes	Width/ Lane	No. Lanes	Width/ Lane						
Expressway	CVD-ST31	70,000	60 (96)	6	12 (3.6)	2	8 (2,4) <sup>3</sup>	16 (4,9)	104 (32)	128 (39)	1,500 (457)	2,500 (762)	6
6-Lane Prime Arterial	CVD-ST31	50,000	55 (88)	6	12 (3,6)	2	8 (2,4) <sup>3</sup>	16 (4,9)	104 (32)	128 (39)	1,150 (350)	2,000 (610)	6
6-Lane Major	CVD-ST31	40,000	45 (72)	6	12 (3,6)	2	8 (2,4) <sup>3</sup>	16 (4,9)	104 (32)	128 (39)		1,100 (335)	7
4-Lane Major	CVD-ST31	28,000 <sup>4</sup>	45 (72)	4	12 (3,6)	2	8 (2,4) <sup>3</sup>	16 (4,9)	80 (24)	104 (32)		1,100 (335)	7
Transit Village Entry	CVD-ST32	22,000	35 (56)	4	11(3.4) & 12(3.6)	2	7(2.1) <sup>5</sup>	36-50 (11- 15.2)	97-111 (29.6- 33.8)	133-147 (40.5- 44.8)		450 (137)	8
Village Entry	CVD-ST32	22,000	35 (56)	4	11(3,4) & 12 (3,6)	2	7 (2.1) <sup>5</sup>	16 (4,9)	76 (23.3)	112 (34.1)		450 (137)	8
Secondary Village Entry w/Median	CVD-ST33	7,500	25 (40)	4	12 (3,6)			10 (3,0)	68 (20.7)	95 (29,0)		450 (137)	10
Secondary Village Entry	CVD-ST33	7,500	25 (40)	2	12 (3,6)				34 (10,4)	61 (22,7)		200 (61)	10
Core Promenade/Village Pathway	CVD-ST34	7,500 <sup>6</sup>	25 (40)	2	12 (3,6)	2	8 (2,4)		40 (12,2)	67 (20,4)		200 (61)	12
Residential Promenade	CVD-ST34	7,500 <sup>6</sup>	25 (40)	2	12 (3,6)	1	8 (2,4)		32 (9,8)	59 (18,0)		200 (61)	12
Parkway Residential	CVD-ST35	1,200	25 (40)	2	16 (4,9)				32 (9,8)	58 (17,7)		200 (61)	15 <sup>7</sup>
Single Loaded Residential	CVD-ST35	1,200	25 (40)	2	16 (4,9) 12 (3,6)				28 (8,5)	54 (16,5)		200 (61)	15 <sup>7</sup>
Industrial	CVD-ST35	2,000	30 (48)	2	26 (8)				52 (15,9)	78 (23,8)	300 (91)	450 (137)	7

1 - See the Chula Vista Design Standard Street Section Drawing for Additional Details and Notes

2 - See Current Street Design Standards policy for Superelevation cross slopes

3 - Only Emergency Parking is permitted

4 - These values differ fro 4-lane majors in a low density area. See Subdivision Manual Section

5 - Only Emergency Parking is permitted except in core areas where parking is permitted with the approval of the City Engineer

6 - This value is for no driveway access from single family residences. Driveway access to single family residences is permitted only if traffic volume does not exceed 5,000 vehicles per day.

See Subdivision Manual Section

7 - Street Segments in excess of 12% shall not exceed 300 ft. in length. Average grade over any 1,000 ft. segment shall not exceed 10%.

8 - Additional width shall be provided for roadways with designated bike lanes.

### **3-404 Private Streets Within Subdivisions**

#### **3-404.1 Applicability**

Private streets are not generally recommended but may be approved if they meet all of the following:

- (1) Private streets will be allowed in new developments where their use is logically consistent with a desire for neighborhood identification and control of access, and where special overall design concepts may be involved. The use of private streets shall be limited to cul-de-sacs and to minor local streets not carrying through traffic and those with a projected traffic volume not exceeding 800 ADT. Private street designations shall be subject to review and approval by the Planning Commission and the City Council.
- (2) The streets are not required to serve properties outside the development and is not required for general public circulation.
- (3) Maintenance of said streets shall be provided by homeowners association and the City is made a party to the covenants, conditions and restrictions and shall have the right to enforce said agreement.

#### **3-404.2 Design Criteria**

- (1) **Minimum Widths**
  - a) With parking on both sides: 36' (11m) curb to curb
  - b) With parking on one side only: 32' (10m) curb to curb
  - c) Without parking: 24' (8m) curb to curb
- (2) **Grades**
  - a) Maximum 15% (Over 12% PCC pavement with cutoff walls required)
  - b) Minimum 1.0% unless a flatter grade, to 0.5% is approved by the City Engineer.
- (3) **Horizontal Alignment**
  - a) Minimum design speed shall be 15 mph (24kph).
  - b) Streets shall normally intersect at right angles and shall have at least 20' (6m) of tangent adjacent to intersections. The tangent length shall be increased where short radii curves are used near the intersections.

- c) Cul-de-sacs shall not ordinarily exceed 500' (150m) in length. Curb radius at the turnaround shall be at least 30' (9m) if parking is prohibited and 40' (12m) if parking is not prohibited.
- d) Centerline radius shall be 150' (45m) minimum for loop streets over 800' (244m) in length, and 100' (30m) minimum for cul-de-sacs and for loop streets less than 800' (244m) in length. Where right-angled bends are used in the street pattern, in lieu of the minimum radii required above, widening sufficient to accommodate truck turning movements shall be provided by use of knuckles or other appropriate means. Curb return radius shall be 15' (5m) minimum.

**(4) Vertical Design**

- a) Sight distance equal to 25 mph (24kph) minimum.
- b) Vertical curves used when change in grade exceeds 1% in sags and 0.5% on crests.

**3-404.3 Other Requirements**

- (1) Lighting adequate for pedestrian and vehicle safety and adequate for security purposes shall be provided subject to the approval of the City Engineer.
- (2) Easements for utility and drainage purposes shall be provided as required by the City Engineer.
- (3) Easements for street trees shall be provided unless waived on the Tentative Map or by the City Engineer.
- (4) Where it is proposed to reduce street widths by the reduction or elimination of curbside parking, equivalent parking shall be provided by other means subject to approval by the Planning Commission.
- (5) Adequate provision subject to Planning Commission approval shall be made for trash pickup and for emergency vehicle access.
- (6) Adequate signs, subject to the approval of the City Engineer and Planning Director shall be provided and maintained at all entrances to private streets clearly designating the private status of such streets.
- (7) The City will assume no responsibility for enforcement of traffic control unless specifically requested and approved by City Council.
- (8) A paving plan shall be submitted to the Department of Planning and Building in compliance with their handout entitled "Guidelines for the Installation and Acceptance of Paving on Private Property in the City of Chula Vista". Along with the paving plan calculations supporting the proposed structural street sections shall be submitted. Structural street sections shall meet the minimum requirements of Section 3-405. (Applies to driveway, parking areas and other similar situations.)

- 
- (9) Where streets are proposed to be offered for dedication and rejected, the street design shall conform to public street standards.
  - (10) The design of all private streets shall be reviewed and subject to the approval by the City Engineer; and the construction shall be inspected by the Engineering Division of the Public Works Department. Private street construction is subject to standard design review and inspection deposits.
  - (11) All private streets with controlled access devices, such as gates, shall contain the following features:
    - a) Gates shall be a minimum 150 feet (45m) away from the extension of the intersection street curbline, except upon approval by the City Engineer.
    - b) All motorized gates shall include a Knox switch and opticom device with manual override approved by the City Fire Marshal.
    - c) A turnaround shall be provided at the location of the gate. The size and location of the said turnaround and gate shall be approved by the City Engineer.

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### **3-405 Street Names**

#### **3-405.1 General**

Candidate street names for all streets, public and private, within subdivisions shall be submitted to the City for review and approval. Generally, street names and suffixes shall conform to CVD TR06A and the following:

- (1) Length - Street names including suffixes shall be no longer than 15 characters with every two "l" characters counting as one character.
- (2) Names for streets shall:
  - a) be unique in spelling and pronunciation to prevent confusion with existing streets;
  - b) not be named after a person unless that person is deceased and has made a significant achievement or contribution;
  - c) be short names for short streets, cul-de-sac streets and winding streets.
  - d) loop streets shall be named such as to avoid intersections with the same name.
  - e) avoid directional prefixes when possible.

**3-405.2 Suffixes** - Street name suffixes are determined by the street classification and direction and shall conform to the following:

- (1) Prime Arterials; Major Streets; Collectors; Residential Streets; Commercial/Industrial Roads that are:
  - a) Generally straight:
    - 1) N-S Direction - AVENUE (AVENIDA)
    - 2) E-W Direction - STREET (CALLE)
  - b) Meandering:
    - 1) N-S Direction - DRIVE (PASEO)
    - 2) E-W Direction - ROAD (CAMINO)
  - c) Cul-de-Sacs:
    - 1) N-S Direction - PLACE (PLAZA)
    - 2) E-W Direction - COURT (CORTE)
  - d) Loop Streets - CIRCLE or LOOP (CIRCULO)

- (2) Hillside Streets that are generally:
  - a) Between fields and enclosed with fences and trees - LANE
  - b) Routes to or between specific location(s) - WAY (VIA)
  - c) Along tops of slopes - TERRACE (TERRAZA)
  - d) On steep slopes - GRADE (GRADO)
  - e) View Streets - VIEW (VISTA)
- (3) Frontage Roads and Alleys are not named.
- (4) Street names shall not include directions with the suffix, i.e., Calle Cristobal South.
- (5) Names for Private Streets shall follow the naming standards for public streets.

**3-405.3 STREET NAME SUMMARY**

TYPE OF STREET	APPROVED SUFFIX (SPANISH EQUIVALENT)	REMARKS
1 – PRIME ARTERIALS; MAJOR, COLLECTOR, & RESIDENTIAL STREETS; & INDUSTRIAL ROADS	N-S DIRECTION: AVENUE (AVENIDA) N-S DIRECTION:....DRIVE (PASEO) E-W DIRECTION: STREET (CALLE) E-W DIRECTION: ROAD (CAMINO)	GENERALLY STRAIGHT GENERALLY MEANDERS GENERALLY STRAIGHT GENERALLY MEANDERS
2 – CLASS III COLLECTOR & RESIDENTIAL CUL-DE-SACS	N-S DIRECTION: PLACE (PLAZA) E-W DIRECTION: COURT (CORTE)	
3 – CLASS III COLLECTOR & RESIDENTIAL LOOP STREETS	CIRCLE (CIRCULO) LOOP	
4 – HILLSIDE STREETS	LANE  WAY (VIA)  TERRACE (TERRAZA)  GRADE (GRADO) VIEW (VISTA)	GENERALLY BETWEEN FIELDS AND ENCLOSED WITH FENCES AND TREES  ROUTE TO OR BETWEEN SPECIFIC LOCATION(S)  COMMONLY FOLLOWS TOP OF SLOPE  STEEP SLOPE VIEW STREET
5 – FRONTAGE ROADS & ALLEYS	NOT NAMED	
6 – PRIVATE STREETS		

**NOTES:**

1. THE MAXIMUM NUMBER OF LETTERS PER NAME INCLUDING SUFFIX – 15; TWO “I” COUNT AS ONE LETTER
2. USE SHORT NAMES FOR SHORT STREETS, CUL-DE-SACS AND WINDING STREETS TO ALLOW NAMES TO BE SHOWN ON MAPS & PLANS.

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### **3-406 Structural Section Design**

#### **3-406.1 General**

- (1) Dedicated streets and Otay Ranch streets with grades up to 12% shall be paved with asphalt concrete; streets with grades over 12% and alleys will be paved with Portland Cement Concrete in accordance with City of Chula Vista Standard Specifications.
- (2) Suitably designed Portland Cement Concrete pavement may, upon approval by the City Engineer, be substituted for any of the asphalt pavements.

#### **3-406.2 Asphalt Pavement**

- (1) Structural Sections.
  - a) Asphalt Concrete:
    - 1) Minimum of 5" minimum section per table 3-405.3 thickness on prime arterials and major (6 Lane) streets..
    - 2) Minimum 4" thickness on major (4 lanes) streets, collectors, and residential collectors.
    - 3) Minimum 3" thickness on residential streets.
  - b) Aggregate base: Minimum type and thickness as shown on table 3-405.3.
- (2) 1" of asphalt concrete may be substituted for 2" of aggregate base on streets with Traffic Indices of 7.0 or lower, however the minimum standards for asphalt concrete and base above are required in all cases.
- (3) The City Engineer shall design all structural sections for asphalt pavement in accordance with CalTrans Highway Design Manual, latest revision ("R" Value shall be based upon "R" Value by stabilimeter or by expansion whichever is the least.)
- (4) Soil tests shall be performed by a civil engineer registered in the State of California, principally doing business in the field of applied soil mechanics. Location and number of samples and soil tests to be performed shall be as designated by the City Engineer.
- (5) Pavements structural sections must be designed to carry the projected one-way truck traffic for a period of 20 years in accordance with the CalTrans Highway Design Manual. The traffic index (T.I.) shall be as established by the City Engineer.

**3-406.3 Concrete Construction**

- (1) Design of Portland Cement Concrete Pavement for streets shall be in accordance with the Portland Cement Association's "Structural Design of Rigid Pavements".
- (2) Curbs, gutters, sidewalks and driveways shall be constructed of Portland Cement Concrete. Temporary facilities may be constructed of asphalt or other material if shown on the approved Tentative Map or authorized by the City Engineer.
- (3) Sidewalk ramps shall be included with the construction of curb returns at such locations as specified by the City Engineer.
- (4) The City Engineer may require cross block pedestrian ways for access to schools, playgrounds, shopping centers and similar facilities. Such ways shall be at least 8 feet in width, fully paved with a minimum thickness of 4" Portland Cement Concrete and bordered by landscaping with chainlink fence or masonry walls.

**3-406.4 Alleys, Driveway Approaches and Driveways**

- (1) Residential driveway approaches shall conform to Chula Vista Standard Drawing CVCS1.
- (2) Alley-type driveway approaches shall conform to Regional Standard Drawing G17 (modified). An alley-type approach may be authorized or required by the City Engineer for any situation involving large traffic volumes and/or safety considerations.
- (3) Driveways serving two or more dwelling units shall be constructed to commercial driveway standards per CVCS1.
- (4) Alleys shall conform to Regional Standard Drawing G-21.
- (5) The minimum thickness of concrete alley driveway approaches and alleys is 5 1/2-inches (14cm) subject to soils tests of the subgrade verifying that the R-values are adequate for that thickness. If tests are not provided, those improvements shall be constructed 8-inches (20cm) thick and shall be reinforced with 6"x6" (15cm x 15cm), 4/4 welded wire mesh. The plans shall have a note reflecting this requirement.

**MINIMUM STRUCTURAL SECTIONS FOR  
VARIOUS ROAD CLASSIFICATIONS(1)**

ROAD CLASSIFICATION	TRAFFIC INDEX MINIMUM	MINIMUM AC THICKNESS	MINIMUM CRUSHED AGGREGATE BASE THICKNESS
PRIME ARTERIAL	9.5	5"	12" (2)
6 LANE MAJOR	9.5	5"	11" (2)
4 LANE MAJOR	9.0	4"	12" (2)
INDUSTRIAL	9	5"	11"(2)
CLASS I COLLECTOR (VILLAGE ENTRY)	8.5	4"	11" (2)
CLASS II COLLECTOR (SECONDARY VILLAGE ENTRY)	8.0	4"	10" (2)
CLASS III COLLECTOR	7.5	4"	8" (3)
RESIDENTIAL	6.0	3"	7" (3)
RESIDENTIAL CUL-DE-SAC	5.0	3"	4" (3)

**NOTE:**

- 1) The native subgrade material shall have an R-value equal to or greater than 40 in order for the minimum structural section to be allowed
- 2) Crushed aggregate base (Green Book Section 200-2.2) shall be used for Prime Arterials, Major Roadways, Class I and Class II Collectors. Alternatively, crushed aggregate base with a minimum sand equivalent of 40, minimum fine durability of 60, and manufactured from a "Hard Rock Quarry" may be used for Prime Arterials, Major Roadways, Class I and II collectors, provided all other quality requirements specified in Section 200-2.2 of the "Green Book" for Crushed Aggregate Base are satisfied. "Hard Rock Quarry" is defined as an igneous or metamorphic rock source characterized by a strong-bonded structure and is excavated by blasting.
- 3) Crushed aggregate base with a minimum sand equivalent of 40 shall be used for Class III Collectors and residential streets, provided all other quality requirements specified for crushed aggregate base in Section 20-2.2 of the "Standard Specifications for Public Works Construction (Green Book)" are satisfied.

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### **3-407 Street Lights, Pavement Markings and Street Signs**

3-407.1 **Street Lights** – At the first improvement plan submittal stage, the Developer is required to submit improvement plans showing street light locations and type. At the second submittal, the Developer is required to submit the following: pull box location and type, conduit and wire location and size, service point locations and voltage drop calculations. Developer will be responsible for furnishing and installing the complete street lighting system including underground circuitry, standard, and luminaire.

- (1) Street Light Standards
  - a) 100 watt, 150 watt and 250 watt, high pressure sodium vapor, street lighting standard per CVCS 6.
  - b) Street lighting standards, foundation and details CVCS 7, 8, and 9.
- (2) Number and location of street lights shall be subject to the approval of the City Engineer.

### **3-407.2 Pavement Markings and Street Signs**

- (1) The Developer's engineer is required to submit a separate signing and striping plan for any street classified as a Class III Collector or higher, or functioning as a Collector. Signing and striping shall conform to the California Department of Transportation's Traffic Manual.

The Developer's engineer shall submit the signing and striping plan with the first improvement plan submittal.
- (2) Developer will pay for street name signs and regulatory signs and their installation.
- (3) The City shall install all regulatory and street name signs.
- (4) Street name signs shall be placed at the right-hand corner of the secondary street entering or intersecting with a primary street.

### **LOCATIONS**

Sufficient lighting shall be provided at the following: intersections, short radius curves, knuckles, at the neck of cul-de-sacs, and at other potential traffic safety locations as may be determined by the City Engineer. Other than at the locations listed, street lights will be installed at typical spacing as specified in the table contained herein, on tangent portions of roadway.

### **STANDARDS**

The following standards shall apply to lighting on public streets in compliance with this policy.

Street Classification	Street Width Curb to Curb	Size/Type Light Fixture	Spacing of Light Standards	Short Radius Curve Defined
Residential Street	36' or less	100 watt HPSV	350' to 450'	250' or less
Class III Collector	> 36' to 40'	150 watt HPSV	300' to 400'	450' or less
Arterial Streets	Greater than 40'	250 watt HPSV	See Notes Below	1,100' or less

Notes:

1. Installations are to be of a staggered pattern (alternating sides of the street). A street light will be provided at a typical spacing of 175' to 250' on the stagger or every 350' to 500' along the same side of the street.
2. Upon divided roadways with center median islands of at least 14' in width, the street light standards will be provided, centered on the median island, at a typical spacing between 125' and 250' between light standards. Each median mounted standard will have two mast arms and luminaries so that there is lighting over each half of the roadway.
3. On existing streets, the same standards shall apply, except that the spacing on residential streets shall not exceed 600'. Street lights on all streets less than 40' in width will be 100 Watt, High Pressure Sodium Vapor (HPSV) full cut-off fixtures.
4. All street lighting shall be installed in accordance with Chula Vista Standards Drawings per sheets CVCS-6,7,9,10 & 11 and CVD-TR04.

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